ABSTRACT OF THE DISCLOSURE

A system and a method of operating the system for non-disruptively inserting a node into the operations of an ATM ring uses the ring operations to update topology information and routing tables at the existing nodes to include therein the new node and one or more virtual paths associated with the new node. Basically, the node to be inserted establishes communications with a ring hub node over an established intra-ring management channel. The node and the ring hub node then exchange information over the management channel and the node performs its initializing routines in order that the node may operate to pass through traffic on the existing virtual paths. The new node next requests from the hub node the assignment of one or more virtual paths for directing traffic between that node and other nodes on the network. In response to the request, the hub node assigns one or more virtual paths to the requesting node and establishes a signaling channel to the node over one of the virtual paths. The hub node also notifies the other nodes of the assignment, and downloads to the new node routing tables that include the established connections over the existing virtual paths. The node may then participate in traffic shaping on existing virtual circuits, and also in call set up and call tear down operations over its assigned virtual paths in the same manner as the other nodes on the ring. A failed, or otherwise inoperative, node is removed from the ring without disrupting the traffic on the ring by essentially reversing the node insertion operations. After learning of the node failure, the hub node instructs the operative nodes to tear down the virtual path and associated virtual circuits that originate from or end at the failed node. Thereafter, the hub node directs the nodes to update their ring topology information to remove the failed node. In the meantime, the nodes continue to maintain the other virtual path and virtual circuit connections over the ring without disruption. When the failed node is later re-booted, the system follows the steps discussed above to re-insert the node, without disrupting the traffic on the ring.